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Su-27 FLANKER

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The entry of the Su-27 Flanker into operational service with the Fighter Aviation of Soviet Air Defence Force and Air Force marked a new milestone in Soviet fighter aircraft history of 1980s. Sukhoi Design Bureau has been traditionally involved in R & D of fighter-interceptor aircraft producing the well-known family of interceptors featuring the Su-9, Su-11 and Su-15.

The Su-27 appeared as a Soviet reaction to development of U.S. air superiority fighters of the late 1970s and proved to be adequate to counteract basically all air threats of that period of time, the last years of Cold War. Successfully passing through R & D stage, reaching IOC and accumulating growing operation experience, Flankers eventually took over a position of primary air superiority fighter of Russian Air Force and Air Defence Force.

From the beginning of the program a number of basic Flanker design modifications were developed. New ones are still underway indicating maturing technology and an expanding operational base of Flanker family.

Inherent aerodynamic and design efficiency made the Flanker one of the most popular display aerobatic planes inside both the Air Force and aerospace industry. The tremendous public exposure enjoyed by the Su-27 during recent years contributed greatly to the acknowledgment by the world aerospace community of the capabilities of Russian aerospace technology and the skills of Russian pilots.

Su-27 Basic Performance

	Su-27	**Su-27UB**
Powerplant	2xAL-31F	2xAL-31F
Afterburning thrust (kg)	2x12500	2x12500
Length (m)	21.94	21.94
Wingspan (m)	14.7	14.7
Height (m)	5.93	5.93
Wheel track (m)	4.34	4.34
Wheel base (m)	5.8	5.8
Wing l.e. sweep angle	42°	42°
Wing area (m)	62	62
Fin area (m)	-	18.5
Max. T.O. weight (kg)	30000	30500
TOGW (kg)	22500	24000
Empty weight (kg)	16000	17500
Thrust to weight ratio with afterburner at TOGW	1.14	1.1
Max. speed at s.l. (km/h)	M=2.35	M-2.0
Take-off run (m)	650	750
Landing run (m)	600	650
Operational range (km)	3900	3000
Max. g-load	9	9

FLANKER PROTOTYPES

The current Chief Designer of the Sukhoi Design Bureau, Mikhail Simonov, headed the work on the Su-27 design. Visible on the background is the folded wing of the navalized Su-27K. Note the paint scheme of the plane he is leaning on. (Yefim Gordon)

Vladimir Ilyushin, the son of famous Soviet aircraft designer Sergey Ilyushin, flew the T10-1, the first prototype of Su-27 Flanker, on its maiden flight. His ribbons attest to his achievements. He is doubtless proud of them and his heritage.

The first Su-27 prototype, designated by Sukhoi Design Bureau as T10-1 (NATO reporting it as codename Flanker A) was used as the aerodynamic testbed for the later production Flanker. Its maiden flight was on May 20, 1977. It is currently displayed at Monino Soviet Air Force Museum. (Yefim Gordon)

The forward fuselage of the T10-1 prototype differed significantly from that of the production Su-27. The nose landing gear shifted forward, and it had a shorter, thinner radome. It was a lighter aircraft than the Su-27 as well. (Yefim Gordon)

The Flanker A wing platform of Gothic shape was quite distinct from wing configuration of follow-up production Su-27s. The main landing gear doors of the prototype were used as air brakes as well. Note their position when lowered. (Yefim Gordon)

The T10-1 was powered by two Lyulka AL-21F-3 turbofan engines rated at 11,200 kg of thrust with afterburner. Technology has improved since 1977, though. The engines on the newest two-seat Su-27 provide five times that much thrust. (Yefim Gordon)

The fifth Su-27 prototype, the T10-5, was used as a testbed for avionics and weapon control system development. The current aircraft still features Gothic wing. Note the placement of missiles under the wings and engine nacelles. Barely visible are the fins of rockets attached between the engines. (Sukhoi Design Bureau)

One of the early production Su-27s (in-house designation T10-17) with standard weapon configuration. It received its special paint scheme for interception role. The color of the various missiles is noteworthy. (Sukhoi Design Bureau)

The P-42 record breaker. To reduce the aircraft take off weight, the ventral fins, tail boom, wing and vertical fin tips, weapon hardpoints, and some avionics and equipment were removed. The aircraft was stripped of the paint also. Note the flag of the former Soviet Union painted on the tail fin. (Sukhoi Design Bureau)

A full-scale mock-up of the navalized Flanker. The lack of the canards, the single wheel nose gear and original position of IRST sensor are noticeable. Note the Soviet Navy Flag beneath the cockpit. (Sukhoi Design Bureau)

The T10-24 canard-equipped prototype was heavily tested by Design Bureau on ski-jump ramp. To explain the designation number, the "T10" means it is the tenth design with a triangular wing. The number "24" means it was the twenty-fourth one built. (Sukhoi Design Bureau)

Before actually landing aboard a ship, a lot of ski-jump assisted take-offs and arrested landings were performed at Test Center in Crimea. The Soviet Navy flag near the number "25" identifies this aircraft as one designated for naval service. Note dorsal airbrake. (Sukhoi Design Bureau)

The first ship-based Su-27K (designated T10K-1) made its maiden flight on August 17, 1987. Chief Test Pilot of Sukhoi Design Bureau Victor Pugachev was at controls. This photograph provides an excellent view of the underside of the aircraft. (Sukhoi Design Bureau)

The production line of the Su-27s in the Komsomolsk-upon-Amur Plant in the Russian Far East. The Flankers share its facilities with the navalized as well as Super Flankers. Considering the size of each Flanker, the production plant must be enormous.

FLANKERS IN ACTION

A pair of Sukhoi are ready to get down to business. Note the R-73 (NATO code AA-11 Archer) short range air-to-air missile hinged under wingtip station of leading Flanker. The missiles operate by an infra-red homing system.

A Flanker returns from a combat training mission. The deployment of its orange-white cruciform chutes reduces landing distance considerably. Note the openness of the Russian landing strip.

A Mikoyan MiG-29 Fulcrum passes the line-up of Sukhois. Although similarly aerodynamically configured, the Su-27 is considerably larger than Fulcrum. In fact, it dwarfs the major aircraft of Western air forces as well.

Chief pilot of the Sukhoi Design Bureau, Victor Pugachev, was the first to perform the highly publicized and spectacular maneuver dubbed "Cobra". The technique is also known as dynamic deceleration. Pugachev's flying skills are respected worldwide.

Well recognized and displayed widely throughout the world, Pugachev's "Blue 388" bears the Sukhoi logo on the fin. The designation "388" was assigned to the famous Su-27 at the 1989 Paris Air Show. It has remained ever since.

The Su-27 makes its noisy, energetic, high alpha take-off at full throttle. Aircraft thrust to weight ratio exceeding 1.0 allows shortened take-off and extremely high SL climb rate. Note the haze behind the aircraft created by the heat of the engines.

This impressive photo was taken from inside the cockpit of a second Su-27 during the tandem takeoff. Note the impressive array of switches and visuals. This is a small percentage of the total of gadgets on the instrument panels.

Wide runways of Russian airfields allow two and even three operational Flankers with wingspans of about 15m to get airborne in unison. The photographer who took this picture caught these Su-27's just as their nose gear leaves the ground. These aircraft accelerate quickly due to the tremendous thrust of their engines.

Being a real Russian aircraft, the Su-27 has been designed to operate in a wide range of environmental conditions. The Su-27 shown here taxies cautiously on the wet runway. Note the pair of landing lights.

Captured by camera soon after its take-off, both the nose gear and main landing gear bays of this Su-27 are still opened. The nosewheel of the Su-27 retracts forward while the main wheels rotate through 90° before folding forward too. The Su-27 has a much sleeker appearance with its landing gear retracted

A Flanker with its dorsal speed brake fully extended returns home. Note the unique profile attained when the dorsal brake is used. The paint scheme of this Su-27 is typical of Flankers that are in-service.

Su-27 landings are frequently made without a drag chute in operational Air Force units. Instead, dorsal airbrakes and wheel brakes are used to moderate extent. Sometimes, the nose is raised to create drag against the underside of the wing.

With their landing lights turned on, a pair of Flankers return from a training mission. The Su-27's nose gear is fitted with three landing /taxi lights. All three are visible on the Flanker at left.

The Su-27 has proven its air superiority as a fighter. It has become the primary fighter of both the Russian Air Force and the Air Defence Force of the 1990s. This pastoral setting belies the Flankers prowess as a potential killer.

The Su-27 aircraft was built in Komsomolsk-on-Amur in Russia's Far East. It became operational at Kubinka Air Force Base and soon began providing air defence of Russia's capital. Here a nearly unarmed Flanker taxies on a barren runway

Returned from flight the aircraft still carries a single AA-11 Archer IR homing missile on the portside wingtip only. This photo provides a good view of the box-shaped air intakes. Note how the leading edge slats are deployed.

This in-the-cockpit view of the pilot of a Flanker shows how his helmet is decorated with a cobra decoration. No doubt it is a reminder of the ability his aircraft to perform the extracrdinary deceleration maneuver that goes by the name of "Cobra". It truly is a feat to brag about.

A brown-suited ground crewman stands atop a ladder to help the pilot perform pre-flight functions. In operational units, the technician usually helps the pilot to connect the intercom cable, oxygen mask and G-suit to the cockpit connectors. The ladder was designed for the specific use of pilot and crew. (Leonid Yakutin)

Post-flight checking of the flight recorder data which was recorded on the foil tape. The presence of the data technician provides an excellent scale to measure the height from the ground to the cockpit. No wonder a special ladder was made. (Leonid Yakutin)

Su-27's line a runway as dusk approaches. *PVO* units rely upon the Flankers to remain operational 24 hours a day. This is possible due to the all-weather, round-the-clock capability of the Su-27. (Leonid Yakutin)

With brake chutes deployed, the Su-27 completes its landing run. It takes about 600m for the aircraft to come to full stop. Note the design of the parachutes. (Leonid Yakutin)

Russian pilots have a lot of problems to discuss in the interval between the flights. Note the configuration of their helmets which provide the pilots with an excellent field of vision and superb head protection. (Leonid Yakutin)

The flying day is over. The pilots are now able to chat before going to their post-flight debriefing. Now it's time for the ground crews to go to work. (Leonid Yakutin)

Only the ruggedness and simplicity of Russian design allows this Flanker maintenance crewman to perform such a stunt. He is seen here covering his Su-27 at its individual revetment. Like all ground crewmen around the world, he has a special affection for his aircraft. (Sergey Pashkovsky)

At the close of the day's flying, the aircraft is prepared by its ground crew to "go to sleep". Though often not considered as exciting as the pilot of the aircraft, the ground crew plays an essential role in keeping this Su-27 in good working order. Obviously, these men know the importance of their job.

A highly experienced pilot explains the mission to a novice. Their respective aircraft wait for them in the background. Note the variation of color between the two Su-27's radomes. (Leonid Yakutin)

Preparation for night flights starts long before sunset. Even though it looks like the day is ending, there is still much to do. This is the time when the night crew operate.

As the sun sinks low, two ground crewmen evaluate the condition of Su-27 number "15". The fairing above their head contains a small brake parachute. It is not often used, however.

The golden stylized trident on a blue background, the symbol of the Ukrainian Air Force were seen on the Su-27 for the first time during an air show held in Gostomel Flight Research Center of Antonov Design Bureau in August 1992. This attractively painted Su-27 is even impressive when it is being hauled. Note the tow bar used to transport the aircraft. (Sergey Popsuevich)

This Flanker is based in Sevastopol. It now belongs to the Ukrainian Air Defence Regiment. Note the distinctive "Eagle and Moon" artwork on the tail fin. (Sergey Popsuevich)

This close-up view of Su-27 number "06"'s tail fin shows off the red star national insignia and the "Eagle and Moon" markings. Personnel on the air base refer to this design as the "Crow and Cheese". This is an allusion to a well-known Russian fairy tale. (Sergey Popsuevich)

Soon this grey camouflaged Su-27 assembled at Komsonolsk-upon-Amur Aircraft Production Plant will be flown by pilots of Chinese Peoples' Air Force. Historically, the Chinese have used many aircraft designed by the Russians. The MiGs used during the Korean war are just one example.

Tail markings and codes of a Chinese Air Force Su-27 Flanker. Compared to the colorful Russian paint scheme this seems rather dull.

The streamlined profile of the Su-27 will give a modern look to the Chinese People's Air Force. The Flanker is a huge step aerodynamically from the earliest jets flown by Chinese pilots in the 1950s. The stubby fuselage of the early MiGs is shamed by the Flanker's state-of-the-art design.

Semi-assembled Su-27 in the Komsomolsk-upon-Amur Aircraft Production Plant already wearing Chinese livery.

The crew of the two seater takes their place in the cockpit. In a few minutes the Su-27UB will takeoff on its mission. Note the difference in paint scheme between the radome of number "63" and the Flanker behind it. (Leonid Yakutin)

Unlike its contemporary, the Mikoyan MiG-29UB two-seater which has no radar, the two-seater Su-27UB fighter-trainer (the NATO reporting name is Flanker C) retains full operational capability. This view illustrates the Flanker's distirctive hump back. Note also the wing leading edge root extensions. (Yefim Gordon)

The shape of the Su-27UB dorsal speed brake differs from that of the single seater. Flanker C has also increased area of the empennage. They are basically the same design otherwise.

The in-flight performance of the Su-27UB is nearly identical to that of the single-seat aircraft. The "UB" suffix of the Flanker C stands for *Uchebno-Boevoy* or Fighter-Trainer. Here the sleek aircraft speeds over a lush countryside.

The two-seater is dubbed "sparka" by the Russian air community. Here an Su-27UB taxies back to its dispersal area after a training sortie. The open tip of the tailcone betrays the use of the brake parachute on landing. Note the mottled blue-gray paint scheme commonly used on the Flankers.

To provide good observation for an instructor from the rear cockpit, the back seat is elevated above the front one. This gives him 6° forward-down vision. The elevation of the seat is clearly visible here. (Yefim Gordon)

Forward and aft cockpits are covered by a one-piece canopy. It has rear view mirrors for both pilots attached to it. The canopy is mostly free of obstructions and allows excellent viewing (Yefim Gordon)

The canopy of the two seat combat trainer is fitted with curtain used to teach cadets IFR mission. In this picture it can be seen pushed to the side near the front portion of the open canopy. The structure of the canopy's interior is displayed well here. (Yefim Gordon)

The general layout of the Su-27UB rear cockpit is identical to that of single-seat Flanker. All systems of the two-seater remain the same with the exception of duplicated instrumentation and control. To the novice pilot the array of controls must be mind-boggling. (Yefim Gordon)

The rear instructor's seat in the Flanker is elevated, unusually for Russian-designed trainers, higher than the forward one. The reason for this is made clear by this photo. The forward view from the rear seat is almost flawless.

OVERVIEW OF A FLANKER

An Su-27 is displayed along with Dassault Mirage F1s and Mirage 2000s at Smolensk AFB during the official visit to Russia of the French Normandie-Niemen Air Regiment in 1992. The size of the crowd is noteworthy. Apparently aircraft enthusiasts know a good thing when they see it. (Sergey Pashkovsky)

The front view of fully armed Su-27 with an opened canopy. Ten hardpoints give the aircraft the capability of carrying different types of missiles, including short and mid range air-to-air missiles. Some of them are even loaded between the engines.

The Su-27 became the first Soviet front line fighter capable of carrying as many as ten guided air-to-air missiles. Some of the most commonly seen are AA-11 Archer carried on the wingtips and AA-10 Alamos mounted under the wings and belly. Both types appear on this Flanker.

One of Lipetsk Air Force Training Center Flankers features a shark painted on the left engine nacelle, wing leading edge extension and empennage. This piece of "nose-and-tail art" is not very commonly seen inside the Russian Air Force. Note the black-striped AA-10 Alamo missiles mounted to the Su-27.

The Su-27 Flanker with standard interception armament kit displayed in front of the aircraft. Gathered together the missiles make an impressive payload. Western pilots ough' to be glad they won't be encountering such a deadly adversary during actual combat.

A load of the R-73 missiles sit on the trolley ready for installation on the Su-27 wing stores. Note crocodile-jaw fashion forward parts of missile pylons open. The crowd of young Russian personnel seemed somewhat awed by these explosives.

As this photo shows production Su-27 have more spaced fins than the prototypes. Flankers that are in-service are usually painted in the scheme shown here. The dielectric panels and the radomes are either green or white. Both styles appear here. (Yefim Gordon)

The Su-27 leading edge extension (LEX) has considerable thickness and sharp leading edge. It is the design of the LEX that helps the aircraft achieve its high alpha performance. The result of this exaggerated photo is an even longer looking radome.

The aircraft's characteristic tail boom, located between the engine nacelles has enough volume to house not only brake chutes and flares but a variety of customer-requested systems. It is clearly visible at the base of the starboard tail fin here. Access is acquired by means of a hinged cap. (Yefim Gordon)

The Su-27 cockpit is equipped with "bulb" rear-hinged canopy providing all around visibility in combat. The importance of this feature is obvious. Note the round black Infra Red Search and Track System (IRST) positioned in front of the canopy. It serves as a tracking device.

"Red 05" is the Su-27 test aircraft of Zhukovsky *LII* Flight Research Institute. The aircraft lacks the IRST (Infra Red Search and Track) device. Note the protective air intake covers installed to prevent fatal injury to pilot and ground crew. (Yefim Gordon)

The size of the Flanker proved to be very convenient for ground crews. Inter-nacelle space provides enough headroom for technicians to walk in and out during turn-arounc and maintenance. The ease of movement no doubt speeds the type it takes to carry out necessary tasks.

The camouflage scheme of this particular aircraft is a sort of intermediate step towards the current Russian Air Force gray/blue scheme. The paint scheme does include green dielectric panels and a white radome, however. As was mentioned before, these are common traits of the Russian color scheme. (Yefim Gordon)

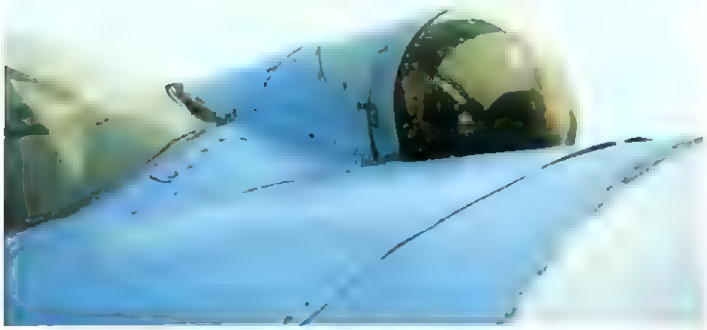
The Su-27 of the then Soviet *PVO* air defence pauses for a second before takeoff. On its wings it carries four dummy R-27R and two dummy R-73 missiles. Russian dummy missiles carry black circular stripes on the body. (Yefim Gordon)

Silhouetted against the setting sun, this Su-27 Flanker is obviously far from its sunset years of service. Currently, it is a primary front-line fighter of both the Russian Air Force and the Air Defence Force. Its distinctive angled nose is shown to advantage here.

The fins of the Su-27 are tall and perfectly vertical. Note the irregular blotches that compose a typical Russian camouflage pattern. The black and white wing design on the tail fin is a commonly seen feature. Note the distant helicopter between the tails.

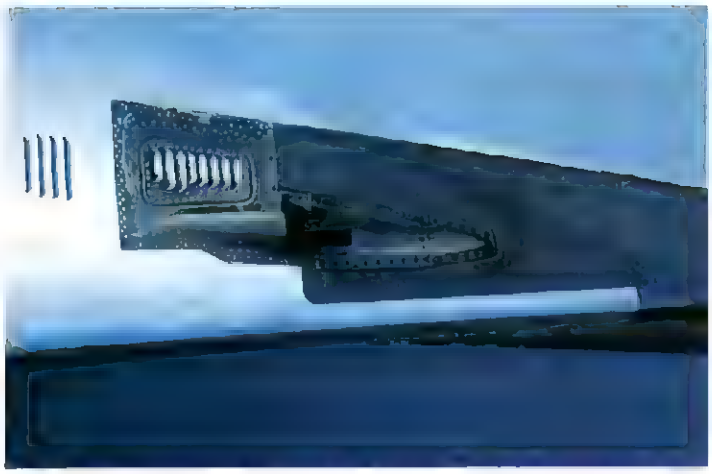
The Su-27 has rear-hinged and hydraulically actuated canopy. It is emergency released via jettison cartridges installed in the cockpit "window-pane" frame. The K-36D ejection seat provides the pilot escape capability throughout the whole design envelope of the aircraft. (Yefim Gordon)

The Su-27 massive radar is one of the largest currently employed on an operational fighter. Note the IRST sensor "ball" mounted just ahead of the windscreen. This sophisticated equipment is part of the reason the Flanker is such a formidable aircraft.



A close-up view of the IRST "eye". IRST device allows pilots to detect and track the threat in passive way. It does not give off radar emissions that might alert an enemy pilot to the Su-27's aggressive actions. (Yefim Gordon)

The nosewheel of the Su-27 incorporates an anti-FOD (Foreign Object Drainage) cover which prevents loose gravel, mud, snow or stones being thrown up during rough airfield operations. It is also equipped with pneumatic brakes. The three landing lights attached to the nose gear are clearly visible here.



The starboard LEX houses a Gryazev/Shipunov GSh-301 30mm single barrel cannon with 149 rounds available to it. The dark area of panels is the blast shield. The several vents located above and behind the gun serve to prevent the build up of gases created by firing the cannon.

Ventral fins were added to enhance directional stability on high speeds and angles of attack. The long fairing between the engine nozzles is the one that accommodates a drag chute. (Yefim Gordon)

The principal armament of the Flanker comprises medium range radar guided R-27R or IR semi-active R-27T air-to-air missiles. R-73 dogfight missiles (wingtip and outboard mounted) are also employed. This photo shows just how they are mounted to the hard points beneath the aircraft's wing. (Yefim Gordon)

The Flanker is the first Russian aircraft with wingtip mounted rails adopted for carrying dogfight missiles. They are mounted in the fashion shown here. Note how the nose and canopy of the Su-27 has been covered. (Yefim Gordon)

Four radar guided R-27R mid-range AAM in a pair under engine nacelles and another two in tandem between nacelles are capable to engage enemy at medium distance. At the lower left of the picture, the nosewheel mudguard is seen in place. Note also the red engine intake covers. (Yefim Gordon)

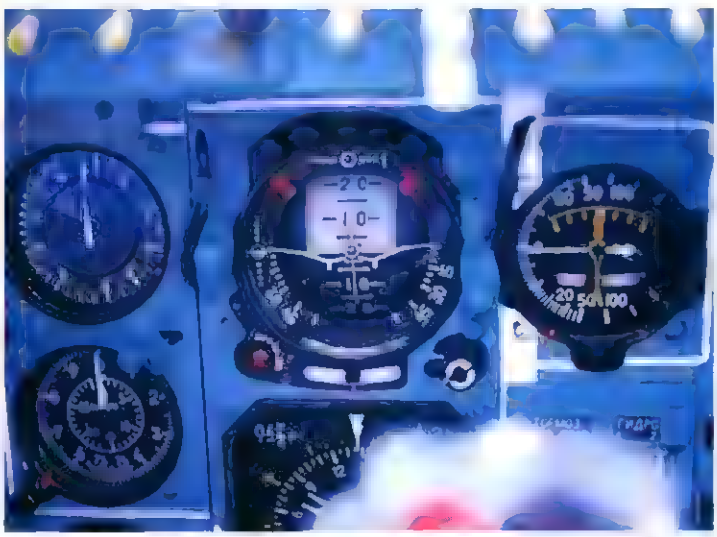
A close-up of an R-27R, NATO codenamed AA-10 Alamo, radar-homing medium range air-to-air practice missile. It is mounted on the APU-470 under-wing launcher of the Flanker. Note its fins.

The Kh-35 antiship missile is similar to the McDonnell Douglas Harpoon. It is said to use inertial navigation coupled with active radar-homing. The missile has an engagement range of about 130km.

Up to four ramjet powered Kh-31 anti-radiation missiles or Kh-31A antiship missiles can be carried simultaneously by the navalized Su-27K, the new Su-35 and the two-seat Su-27IB fighter-bomber. The missile shown here has an almost toy-like configuration. Those on its receiving end would doubtless disagree with this observation.

The Su-27 scoop/wing-screened air intakes clearly shown here. Their design provides excellent results throughout a wide angle of attack range. Their squared shape is tapered for improved aerodynamics.

The left side of the main panel contains six instruments: clock, G-load and angle of attacks (AoA) indicator, altimeters, both barometric and radio, attitude directional indicator (ADI) and indicated airspeed indicator.



Central instrument panel deals with the main instruments, indicated airspeed indicator, barometric altimeter, attitude directional indicator (ADI) and turn and slip indicator.

THE FLANKER IN FLIGHT

Tupolev Tu-95MS strategic bomber of the CIS Long Range Aviation Regiment accompanied by a pair of Flankers. The Su-27 is often assigned to escort missions. Take note of its awesome size.

This pair of Su-27s just took off from a Soviet Air Force base on a simulated night interception mission. The width of the runway allows for this double takeoff.

Rear in-flight view of the Su-27 flying with afterburner lit. Visible convergent/divergent nozzles are the radial fuel sprays in the A/B flame stabilizers. The aircraft is powered by two Lyulka AL-31F engines. (Sergey Pashkovsky)

The flight performance of Flanker is considered to be outstanding due in part to its advanced aerodynamics. Its powerplant of two Lyulka AL-31F engines share the credit for this distinction. It possesses amazing climbing capability. (Sergey Pashkovsky)

A pair of Flankers in formation flight over a Russian Air Force base location in the Far East, near Khabarovsk. Notice how effective the camouflage paint scheme is while these aircraft are in flight. Only the green paint stands out.

Same Flankers, red "07" and "15" in close formation aerobatic-style flight. The aircraft are not even equipped with dummy missiles. What a picture of gracefulness they are.

Two Lyulka AL-31F turbofans delivering 12,500kg of A/B thrust provide this fighter with high performance capability even at military thrust. Western aircraft that have escorted Su-27's have been hard pressed to keep up. It is truly a pilot's aircraft.

A simulated combat air-to-ground attack. Note the S-5 unguided rocket pod under the wing of this diving Su-27. From this vantage point the aircraft resembles a bird of prey.

This diving Flanker, red "10", is equipped with the *Sorbtsiya* ECM wingtip pods instead of missile hotpoints. Note the white tips of the pods. Air enthusiasts can only imagine the sensation felt by the pilot during this maneuver.

The first prototype of the Su-27 had the wing of Gothic shape. As a result of numerous wind tunnel and flight tests, the Flanker received its tapered swept-back wing with the wing leading edge extension (LEX). This change made a marked improvement in performance.

This Flanker from the Lipetsk Air Force Training Center displays a shark's mouth image on the right engine nacelle. Given the ferocious nature of this aircraft it is an appropriate design. Aircraft hobbyists should take note of this addition to the paint scheme.

Ventral fins were added to the production SJ-27 to enhance directional stability at high angles of attack. The opposite was done to the MiG-29 Fulcrum whose ventral fins, while used at prototype stage of development, disappeared on production aircraft. The ventral fins can be seen Flanking each of the afterburner nozzles

A group of Su-27s painted in standard VVS (*Voenno-Vozdyshnye Sily* - Air Force) markings. They are equipped with the dark green radome and dielectric fairings. The precision of their formation flight is noteworthy.

Among Russian pilots the Su-27 is considered to be one of the easiest and most pleasant jets to fly. This is true mostly because of the inherent aerodynamic efficiency and the fly-by-wire flight control system (FBW FCS) advantages. The Flanker certainly has set a standard for other aircraft manufacturers to follow.

A pair of Flankers during the formation maneuvers. Due to the aircraft's inherently exceptional range, optional external fuel tanks are rarely utilized. The absense of that extra weight has a positive effect on the aircraft's speed.

"Red 15" is seen here climbing during a combat training mission. This Su-27 hails from the Khabarovsk Air Force Base. Lieutenant Colonel Valentin Petrov is at its controls.

A group of four Flankers perform banked turns. In the Russian Air Force, routine training of fighter pilots includes formation flights as a standard element. These pilots have learned their lessons well.

The Su-27 is a large aircraft for a fighter. It is actually somewhat larger than the McDonnell Douglas F-15, the Flanker's counterpart during the last years of Cold War era. One has to wonder what would result from a dogfight between these two aircraft.

An operational Su-27 flies over the fields of Mother Russia. The patchwork quality of the countryside provides a great backdrop to show off the aircraft. Note the wingtip pods fitted on the Flanker.

Dirty black residue around the GSh-301 cannon's muzzle reveals gun firing practice took place during this mission. The discoloration will be removed from the blast shield immediately after landing. The blast shield on the Su-27 is made of titanium.

The two-ship Su-27 formation is standard in Russian Air Force. The right corner of the shot is obstructed by the canopy frame of the support aircraft. Only the majestic silhouettes of the aircraft identify them as Su-27. Against the puffy clouds, no light is available to show their colors.

The Su-27 pilots believe the Flanker provides the best visibility in every direction of any other Soviet-built fighter. Such a benefit could give a Flanker pilot the edge in combat. Above-average visibility makes one less thing for him to be distracted by.

This Flanker is based at the Lipetsk Air Force Training Center and has the shark mouth painted on the left engine nacelle. It makes one wonder wether such "nacelle art" produces any type of psychological effect. No doubt it boosts the pilots confidence a little.

Summer, 1992. A pair of Flankers are shown during the close formation flight practice at the Lipetsk Air Force Training Center. In 1992 Lipetsk became the second "open house" inside the Russian Air Force to hold two major air shows for Russian public. Kubinka was the first.

The Flanker in vertical climb. Two Lyulka AL-31F turbofans provide the aircraft high thrust-to-weight ratio enough for such energetic maneuvers. The combination of the beauty of the man-made Su-27 and the natural beauty of the clouds and sky is marvelous.

The Su-27's wing leading edge extensions generate vortex flows which contribute greatly to the enhancement of the aircraft direction stability at high angles of attack. They are credited with improving the Flanker's performance. The aircraft's appearance would not be as recognizable without them.

A pair of Fankers in flight. Neither aircraft is armed, although both carry a full complement of pylons. The terrain over which they fly is certainly interesting.

When lightly loaded the Su-27's flight performance is phenomenal. Its flight seems effortless. Its twists and turns are downright graceful.

An upper view of a Flanker diamond formation. Note the contrails following the rear aircraft. From this distance the blue-gray paint scheme serves to mask these Su-27s from view almost.

Often seen high in the sky over Russian towns are streams of condensation created by Flankers of the Air Defence Force. They stir memories of the thousands of contrails stretching behind the engines of B-17 bombers in films of WWII. As blue as the sky is, these streaks look like white foam stirred up by a boat.

Cotton ball streams of condensed water vapor direct the eye to these Su-27s. This effect often occurs at high altitudes. The pilots ought to consider them plumes of glory.

Two Su-27s escorted the Mil Mi-24 assault helicopter during the Moscow Tushino Air Show in August, 1989. This service demonstrated the lower end of the flight envelope. All three aircraft represent a proud Russian Air Force.

The Su-27UB two-seater during vertical climb. This photo provides a good view of the profile of this 21.94 meter long aircraft. The height of the Su-27UB is 6.36 meters. (Sergey Pashkovsky)

A burst of flame shoots from the muzzle of this Flanker's cannon as it swoops downward while practicing for an attack. The Gryazev/ Shipuncv GSh-301 is probably the most light weight aircraft 30mm cannon of the world (some 50kg). It provides this IRST-equipped Flanker with impressive lethal capability both for air threats and ground targets.

The Su-27 became the first Soviet-built fighter aircraft with relaxed stability and full authority fly-by-wire control system. Pilots can push the flight envelope in a Flanker in ways they'd never dream of in Western aircraft. The "Cobra" maneuver is one example.

The Su-27 is usually thought of as being a primary PVO (*Protivo Vozdushnaya Oborona* - Air Defence) dedicated interceptor. However, the Flanker is also commonly used in substantial numbers as an escort fighter for Long Range Aviation and Fighter - Bomber Tactical Aviation aircraft of the Russian Air Force. The Flanker's high alpha capability and missile inventory are two reasons it is an outstanding fighter.

Two Kubinka-based Flankers painted in the conventional Russian Air Force camouflage scheme. Note the close formation of the four Su-27s of the "Russian Knights" aerobatic team in the background. The paint scheme on their aircraft contrast starkly with the surrounding sky.

Accelerated vertical climb is an inherent maneuver of the Flanker. The speed at which the climb is effected is amazing. Bear in mind that the prototype model was a much lighter aircraft than this production Su-27. Imagine its speed!

With a shining belly, this Flanker passes the upper point of the so-called oblique loop. This combat maneuver was developed and successfully used by Sovie: pilots during war.

Flanker can intercept targets at heights up to 18,500m. Since the Su-27 was designed to be a long range interceptor, the targets are often beyond visual range. Missiles are provided for elimination of these aircraft.

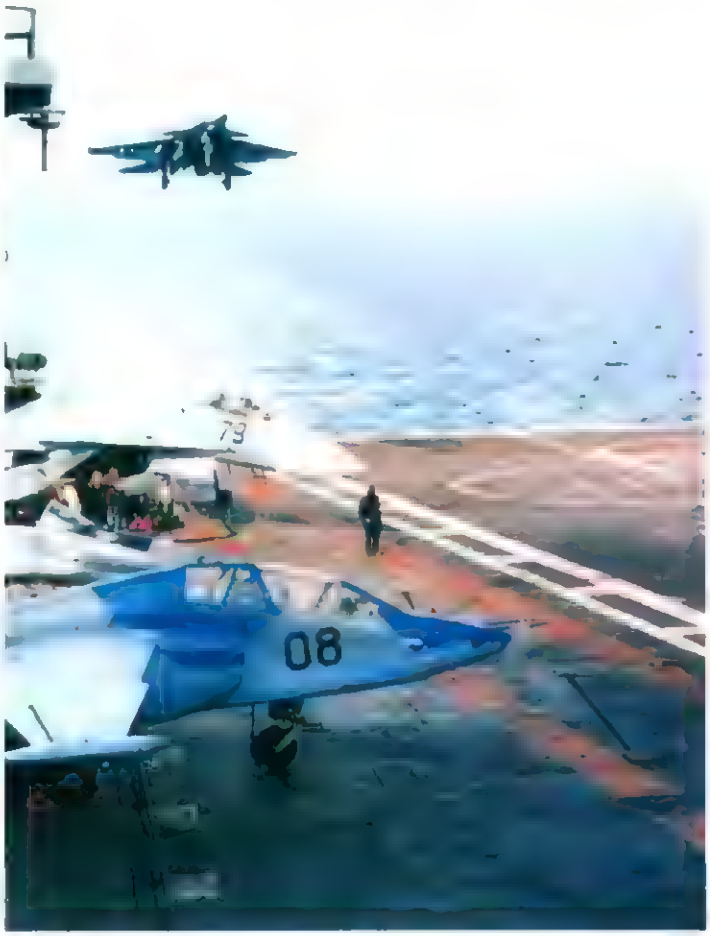
A Sukhoi Su-27UB two-seater (left) and a single-seat Su-27 (bottom) escort a Tupolev Tu-95MS strategic bomber of the CIS Long Range Aviation Regiment. The bomber is in safe hands. Considering the armament and aerodynamic capabilities of the Flanker, it is the perfect flying companion.

A distant view of the first Russian 75,000-ton class large-deck aircraft carrier, the "Admiral Nikolay Kuznetsov" (originally "Leonid Brezhnev", then "Tbilisi"). Navalized Su-27Ks, along with other Russian ship-based aircraft such as the Sukhoi Su-25T and the Mikoyan MiG-29K, undergo flight tests from its deck. The vessel is now part of CIS (Commonwealth of Independent States) Northern Fleet

Along with Su-27K, smaller Mikoyan MiG-29Ks and Sukhoi Su-25Ts made a number of landings aboard "Admiral Kuznetsov" carrier. All three types of aircraft can be seen on deck here. Note the design of the helicopter

With the pilot strapped in and the retractable chocks raised, this Su-27K is waiting for take-off clearance before it begins its mission over the Black Sea. The aircraft is armed with AA-11 Archers for self-defence and medium range air-to-air AA-10 Alamos. The dielectric panels and radome are painted differently on this navalized Flanker

The first arrested landing was made on a Soviet aircraft carrier by the second prototype of the Su-27 (plant designation T10K-2). It was flown by Sukhoi Design Bureau Chief Test Pilot Victor Pugachev on November 1, 1989. Note the absence of a designation number on this Flanker



After a training flight over the waters of Black Sea, a Su-27K approaches the deck of the first true Russian aircraft carrier. Note how the nose of the aircraft is angled up to create drag. The arresting cable is visible at the right of the photograph

Here a navalized Flanker shoots airborne by means of a main deck's 12 degree ski-jump. The afterburner acceleration gives the aircraft an added boost.

Debriefing of the Su-27K pilot. The civilians around the aircraft are Sukhoi engineers. The appearance of the Russian naval helicopter differs greatly from Western "choppers" and other Russian helicopters.

To improve "straight-down" visibility, the IRST ball on Su-27K was offset slightly to the right. The two red stars on the nose of the Su-27K indicate two practice targets destroyed. Note the Head Up Display (HUD) apparatus visible through the windscreen.

The navalized Su-27 has a strengthened two-wheel nose gear. The three landing/taxiing lights are equipped with LSO (Landing Signal Officer) signal lights. The Su-27K has more pressure in its tires to provide carrier operations with maximum load.

The tunnel formed by the engine nacelles houses a pair of medium range air-to-air R-27 missiles. The tailhook attached to the rear fuselage is hydraulically actuated. A fine close-up view of the afterburner nozzles is provided here

Twelve hard points on the Su-27K allow it to carry a wide range of weaponry from small dogfight AAMs to huge antiradiation and antiship missiles. Notice how the wings of the navalized Flanker are hinged for efficient storage. The in-flight refueling probe protruding from the nose is retractable.

Leading edge extensions of the Su-27K were changed to provide installation of canards, thus allowing a higher angle of attack (AoA) during landing. While it increases aerodynamics, it does little for a aesthetics. The missile visible is a radar-guided medium range air-to-air R-27R (AA-10 Alamo).

The Su-27K's folded outer wing panel carries two dogfighter IR-guided R-73 and a single infrared semiactive medium range air-to-air R-27T (AA-10 Alamo). The method of attachment of the missiles to the hardpoint is noteworthy, one could almost consider the addition of missiles to the aircraft as decorative if they weren't so lethal.

Additional weapon configuration includes AA-10 Alamos under the engine nacelles. An antiship missile designated ASM-MSS is mounted on the belly of the Flanker. It's paint scheme seems elaborate for a missile (Yefim Gordon)

The fuselage tail section structure of the navalized Flanker is strengthened to withstand the high stress caused by the arresting hook. The red Russian letters warn of the danger of being under the hook. Note the cone tip of the fairing.

In order to save parking space on the deck of the carrier and provide adequate hangar stowage, certain modifications are made to carrier-based aircraft. Two of these are shown here: folding wing and forward stabilizer. The central tail boom is also shortened. (Sergey Pashkovsky)

Another view of publicly displayed Su-27K. Few people ever get to see a Flanker so fully arrayed. The number "69" is not applied to right side of the aircraft.

A ground crew officer unfolds the Su-27K's wing prior to a demonstration flight during the MosAeroshow'92 held in Zhukovsky. Unlike Russian Air Force aircraft, navalized Flankers usually sport a gray radome and gray dielectric panels scheme. Note the red paint on the interior of the access panels.

To reach long range capability during maritime operations, navalized Su-27Ks are fitted with retractable inflight refueling probes. The one shown here is in the extended position. As a Flanker nears a tanker aircraft, he maneuvers the probe into the trap at the end of the fuel hose.

It seems everything is folded on a navalized Su-27K. Even the wings on the Kh-35 antiship missile are hinged. A lot of forethought went into the design of this aircraft. (Yefim Gordon)

Free takeoff of a lightly loaded Su-27K from an angled main deck is possible when full afterburner is applied. This speaks well of the power of the engines and the aerodynamics of the Flanker. Western aircraft would find such a takeoff difficult.

The nose landing gear of one navalized Su-27K features lack of LSO signal lights. The configuration of the nose gear differs from Air Force versions of the Su-27 in other ways, too. These differences are mainly to accommodate launching from the deck. (Yefim Gordon)

Jet blast deflectors are raised behind Su-27K number "79". They are needed to protect the ground crew and other aircraft from the scorching blast of the engines. Retractable chocks hold the aircraft in place during test runs of the engines.

The tailhook of an Su-27K is extended prior to landing aboard the "Kuznetsov" during evening landing practise. As the aircraft lands, the tailhook will catch on the arresting cable. Note the brilliance of the lancing lights.

Originally a dazzling white, the radome of Su-27 number "79" is now dirty with use. This workhorse has suffered from the severe, aggressive atmosphere of salt water. The blue paint has held up well in comparison

A regular Su-27 and a navalized Su-27 share the sky. The Su-27K distinguishes itself externally from ordinary Flankers mainly by the addition of canards and a tailhook. The canards are barely visible from this distance.

The Su-27K has larger wing platform area. However, the wingspan remains unchanged. Trailing edge control surfaces comprise inboard flaps and outboard ailerons. There is a single flap on the ordinary Su-27

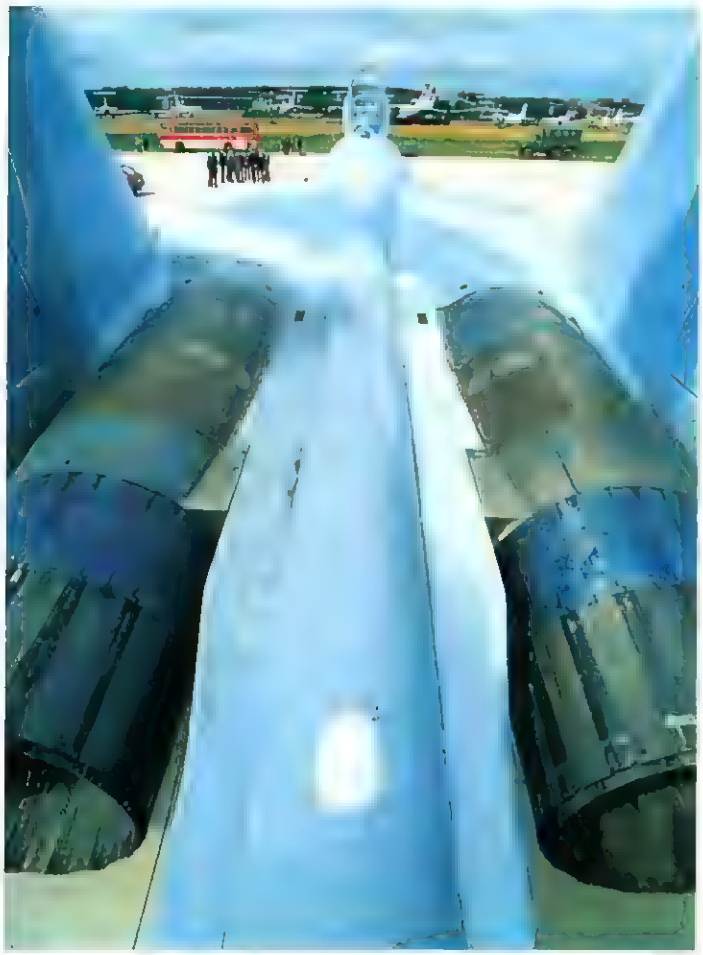
Test pilot Sergey Melinkov of the Sukhoi Design Bureau. He performed many arrested landings on a carrier during navalized aircraft seaworthy trials. This photo provides a good close study of the helmet worn by Russian pilots.

Colonel Timur Apakidze became the first Russian "tailhooker" to rise from the ranks of service pilots. His modern ZSh-7 helmet has a provision for a helmet mounted sight. Note his leather jacket and the striped Navy shirt underneath.

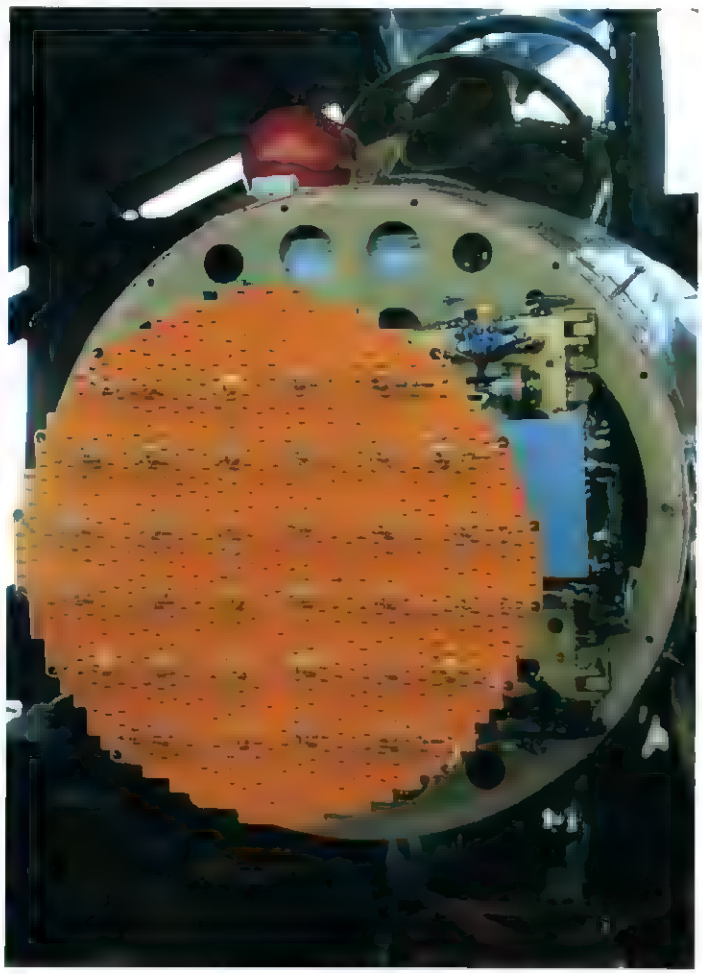
The Flanker's radome glows gold as it reflects the dwindling sunlight. This Su-27 is performing an evening test flight. It is an all-around aircraft whose performance is as dazzling as this sunset.

As this Su-27K streaks high above the earth, it displays its underside clearly. This Flanker is fitted with only two wingtip and two belly-fitted missiles. It looks ready and seems willing for a fight.

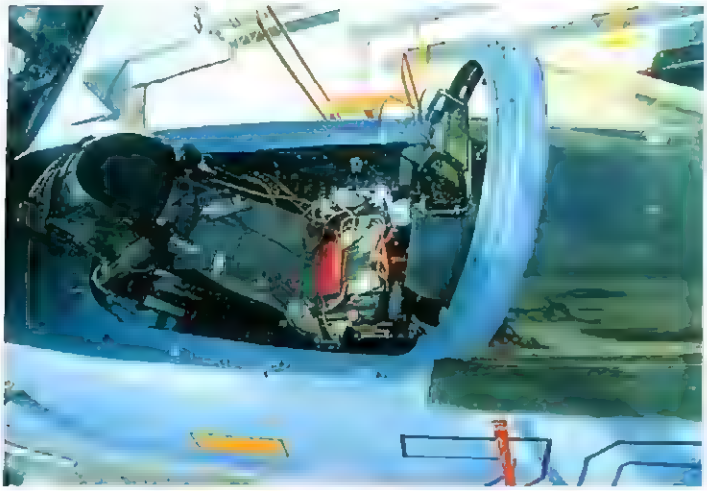
Displayed with its weapons complement is the Su-27M (*modifitsirovanny* modified) multi-role fighter. It is designated as the Su-35 by the Suhkoi Design Bureau. The Su-35 reportedly could carry up to 8,000kg payload externally.



This dorsal view of the Su-35 from the end of the tail boom gives an idea of how huge the aircraft really is. No wonder it is called the Super Flanker.



This sophisticated equipment is the phased-array antenna of the Su-35 radar. It provides the aircraft with multi-target engagement capability



The rocket-propelled *Zvezda* K-36DM ejection seat of the Su-35 provides zero-zero escape capability. Note the red ejection handles. The K-36 DM was the creation of Chief Designer Guy Severin.

The instrument panel of the Su-35 Super Flanker features two large CRT multi-function displays. It appears to be a more high-tech version of the Su-27's instrument panel. Only a handful of talented pilots ever make use of its dials and switches.

Installation of the Severin K-36DM ejection seat into its place aboard a Su-35 after routine maintenance. Note the complexity of the crane equipment.

The wing tip missile rail on this Super Flanker has been replaced by an ECM pod. Other weaponry here includes a laser-guided bomb; it is painted blue.

A Kh-31 anti-radiation missile is loaded on the station under left engine nacelle. The centerline-mounted missile with the red cover is a radar-guided R-27ER. It is used to kill targets at medium distances.

The Su-35 is intended to have a multi-role capability. Laser-guided bomb units are used to deliver air power against ground targets. Here we see a ground crew member using a jack to attach one of these bombs to an underwing pylon. Note the laser guidance device on the bomb's nose.

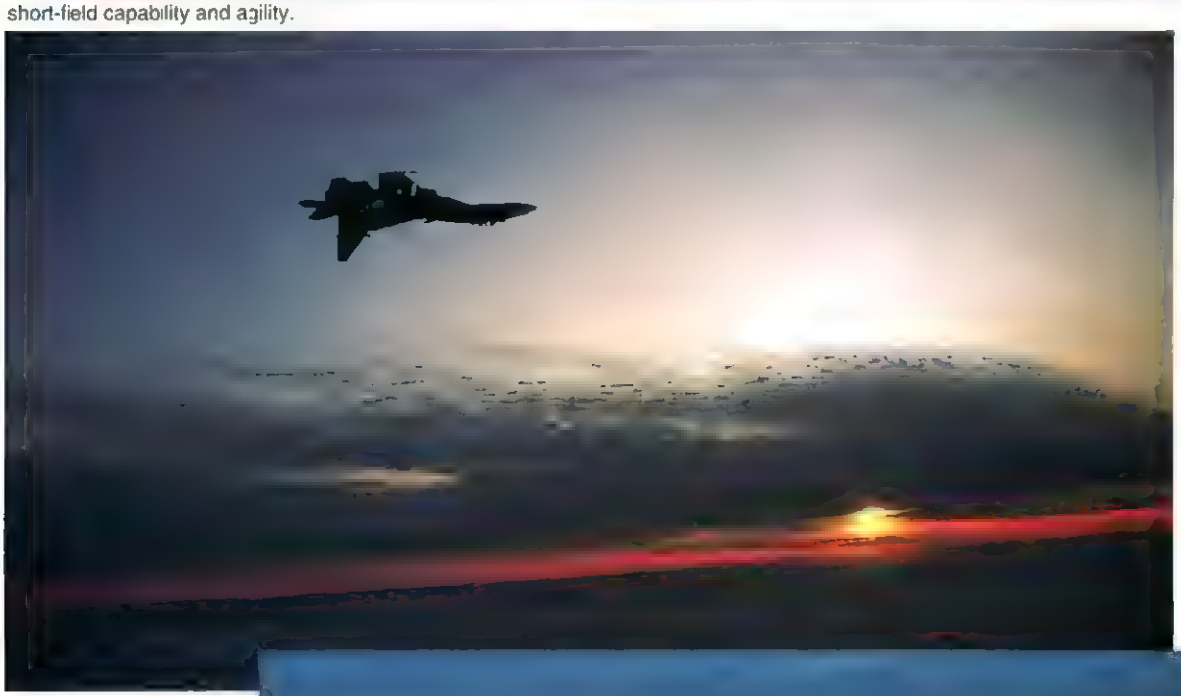
These two tandem centerline weapon stations are equipped with medium range air-to-air R-27ER. Their NATO nickname is AA-10 Alamo missiles.

As a departure from the basic cesign, the Su-35 Super Flanker has a twin-wheel nose gear like the Su-27K. This photo shows the pneumatic reservoir attached to the red-painted panel which powers the nose gear.

Two uprated Lyulka AL-31F turbofans prov.de the Su-35 with what has been rated as over 13,000kg of afterburning thrust. Supposedly, they have been dubbed "AL-35Fs". The tunnel-like affair seen here is one of the afterburner nozzle interior.

A Su-35 makes an evening rendezvous with an Iyushin IL-78 Midas tanker. As it passes beneath the tanker, the Flanker maneuvers up to the fuel line so the fuel probe can connect to it. The pilots of both aircraft must perform without flaw.

Here a brand new Su 35 overflies the Russian Far East. Its canards are just visible behind the cockpit. These aerodynamic forewings give the aircraft short-field capability and agility.



The promising Su-35 has breathed new life into the Flanker program. The whole Su-27 family owes a debt to its amazing array of abilities, one of which is displayed here.

This Su-35 has lost its "clean" appearance by lowering its landing gear in flight. As a result of this action, the Super Flanker's speed is more easily reduced. Another quality of the Su-35 is its low speed capability.

The Su-27IB (IB - *Istrebitel-Bombardirovschik*/Fighter-Bomber) made its first public appearance at Machulischi Airbase near the Belorussian capital of Minsk in the spring of 1992. Its debut took place during a meeting of the leaders of the CIS countries. This photo shows what these leaders saw.

The Su-27IB was flown for the first time on April 13, 1990 by Sukhoi Design Bureau test pilot Anatoly Ivanov. That flight was the beginning of a new era in Russian aviation. Russian fighter-bombers would never be the same. (Sergey Pashkovsky)

Su-27IB is readily distinguished from other members of the Su-27 family with side-by-side cockpit and the unusual hard-edged front fuselage. The noticeably enlarged dorsal fairing is another new feature. The canards are similar to those used on the navalized Su-27.

A close-up view of the canard on the port side of an Su-27IB. As can be seen, it is able to achieve a noteworthy angle.

The Su-27IB has eleven external stores capable of accepting a variety of air-to-surface weapons. Included among them is the Kh-31 anti-radiation missiles. This photo shows a Kh-31 attached to each of the intake-mounted pylons.

The Su-27IB features a side-by-side cockpit arrangement. The pilot is positioned in the left seat and the weapons system operator is at right. With this increased cockpit, the forward fuselage takes on a bulkier appearance.

The structure of the Su-27IB canopy wind shield and forward frame is different than the other Su-27s. It is more similar to that of Sukhoi Su-24 Fencer tactical bomber/strike aircraft. The absence of a painted radome is an obvious change.

Canard configuration became almost in-house standard for the late modifications of the Su-27. This far-off dorsal view shows the canards sprouting from the fuselage. It also provides a good study of the aircraft's impressive wingspan.

The Su-27IB has excellent performance throughout its flight envelope. This was demonstrated during its display at MosAeroshow in August 1992. Here the canards seem angled somewhat as this maneuver takes place.

The Su-27IB's crew ingress via the nosewheel bay is a distinct feature of the aircraft. It was a pure novelty for Sukhoi Design Bureau. Unknown design considerations have led to deviation from the conventional layout of the side-by-side cockpit used earlier on the Su-24 Fencer.

The 35 metric ton Su-27IB has no tailhook. Nevertheless, the claim was made at MosAeroshow that it was capable of being used for training pilots for carrier landing missions. If this is true, it proves an increased versatility for the aircraft.

The unique "duck nose" shape of the Su-27IB has earned it the nickname of *Platypus*. It may not be a fearsome name but it is appropriate. The shape of the forward fuselage makes the aircraft simple to identify even at long distance.

The crew of the Su-27IB. The Sukhoi pilot Evgeny Revunov and the weapons system operator Evgeny Donchenko pose in front of their aircraft. Though their flight suits differ somewhat, their basic appearance is very similar.

The Su-27IB aircraft is equipped with a retractable in-flight refueling probe. It is located just beneath the cockpit windshield frame. Notice how it sits recessed into the body of the aircraft.

The Su-27IB eases up to the refueling position behind an Ilyushin IL-78 Midas tanker. Note the extended refueling probe. This essential procedure eliminates the need for extra fuel tanks which would limit performance.

In this photo, the Flanker's refueling probe is hooked to the refueling line of an unseen Ilyushin IL-78 Midas tanker. Note the small canards forward of the main wing. Along with the side-by-side cockpit and hard-line nose, these are the distinctive features of the Su-27IB.

The drogue and probe air-to-air refueling system eventually became the primary AAR method for Soviet/Russian tactical aircraft. It is a common practice among the U.S. pilots to refuel this way. This photograph proves the Russians have adapted well to the procedure.

The Su-27IB rear fuselage/empennage retained the proven and aerodynamically efficient design of the basic aircraft. This provides low base drag and contributes greatly to unique range capabilities of the aircraft. This angle shows the small pitot tubes attached to the front of the fuselage.

High above the scenic landscape three ships fly in formation to display their prowess at air-to-air refueling. The Su-27IB and Su-27PUs became star attractions at the Moscow Air Show in 1992. It was probably the first opportunity for air enthusiasts or even professionals to see the new Sukhoi design in detail. (Sergey Pashkovsky)

Tethered to the refueling line, these Su-27s display tremendous formation flying skills. Note the size of the tanker. It dwarfs these fighters, and they are large themselves.

As the most advanced Russian strike aircraft of the early 1990s, the SJ-27IB can take over a position of major front-line strike power for the Russian Air Force. Its usefulness will last even beyond this century, provided the Air Force is able to afford it. Such a high performance aircraft deserves a long life of service.

Clearly different from the last generation of U.S. strike/attack or even fighter aircraft, the Su-27IB has no obvious "fancy" stealth technology features. In fact, it's tail fins are as prominent as a clipper ship's sails. Still, it's an attractive aircraft and an invaluable weapon.

THE "RUSSIAN KNIGHTS"

The blue and yellow "sunburst" pattern Soviet Air Force's flag decorates the fins of the Su-27s flown by the "Russian Knights". This flag dates back to the 1920s. Unlike the majority of Soviet era symbols, it will be kept as an official banner of Russian Air Force.

The "Russian Knights" Su-27s received their paint scheme soon after the August 1991 year coup. The scheme includes the patriotic red, white and blue colors of Russian Flag. Standard camouflage finishes off the overall paint job.

Russian Air Force base at Kubinka, the home of the "Russian Knights". With all the Russian trees around it, sometimes resembles park zone. It is a rather idyllic setting for machines of such deadly force.

Close-up of the Sukhoi Design Bureau insignia on the portside of a Flanker. It is nicknamed "Russian Knight" by pure coincidence. Note also the various insignia adorning the pilots helmet.

The presence of one of the "Russian Knights" aircraft in the company of the war painted Sukhoi Su-25TK and Mil Mi-24P assault helicopter in display hangar of Kubinka Air Force Base is not a surprise. All the base's aircraft retain full operational capability. Concealment from enemy aircraft would be more easily achieved with the other two planes, however. (Yefim Gordon)

"Russkiye Vityazi" ("Russian Knights") logo on the port side of knights aircraft emulates old style Cyrillic.

An Su-27 aircraft of the "Russian Knights" sits near the entrance to the squadron maintenance shop at Kubinka AFB. Note the variety of aircraft in the background. None of them matches the splendor of this Flanker, though.

This two-seat Su-27UB is resting on the parade plateau following a day-long demonstration for governmental de egation. Over 100 official delegations, both domestic and foreign, visit Kubinka AFB annually. Undoubtedly they are impressed by what they see.

A 'ormation of "Knights", as seen from support aircraft, is headed for Anchorage Alaska. There they participated in the local air show display in summer 1992. As befits such an elite group, they stand out against the vast expanse behind them.

En route to Alaska, the "Russian knights" fly over a bed of clouds. Note how some of the clouds resemble the rounded dorsal section and cockpit of the Su-27s. I suppose if the design is good enough for Mother Nature, it's good enough for the Sukhoi Design Bureau.

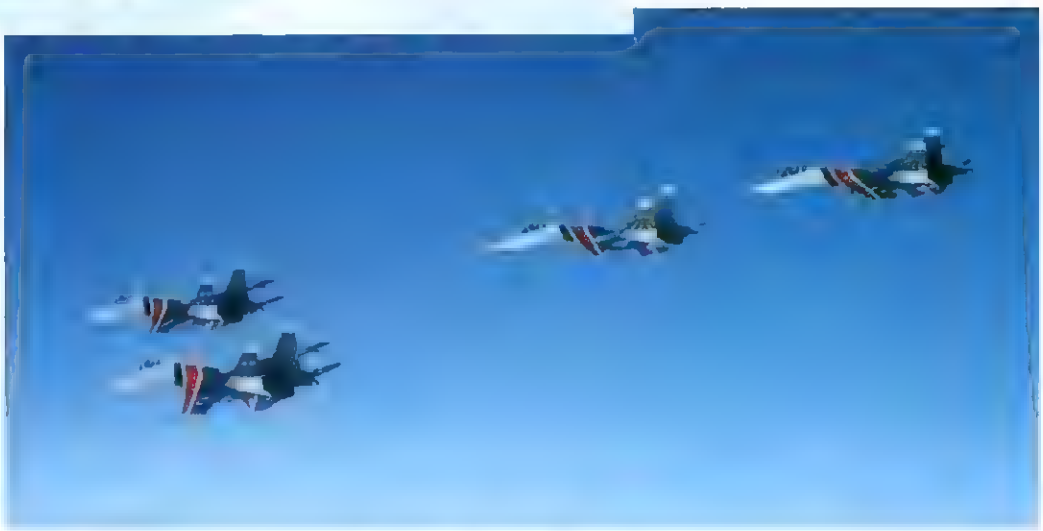
A pair of "Russian Knights" Su-27s are escorting a Tupolev Tu-160 strategic bomber. Regardless of one's political sentiments, this is a wondrous sight. It matches the majesty of the landscape below.

"Russian Knights" in tight diamond formation. This is the trademark of the Kubinka squadron. The skill of each of the pilots is readily apparent. Each one is a first class or sniper pilot.

An overhead shot of the "Russian Knights" team taken in early 1991. Only five aircraft were painted at the time. Formation flights of the newly born team were expanded from four aircraft to include six during 1991.

Five "Russian Knights" Flankers visited RAF Scampton in September 1991. The visit was part of an official military goodwill exchange. The Russian pilots attended "Battle of Britain" Displays at Finningley and Leuchars providing the first international exposure of the team. Scampton is the home base of the Red Arrows Flying unit.

Demonstration formation flights were a standard "mission" at Kubinka for many years. All the hours of practice certainly paid off. The "Russian Knights" amaze all who view their air shows.



The Su-27's qualities as an air superiority fighter proved to make the aircraft perfect for aerobatic displays. At their air show, they performed the incredible feat of virtually hovering above the spectators during an extremely low speed flypast. It was a real treat for the air enthusiasts to enjoy.

A six-aircraft formation is apparently the limit for the Su-27. In orchestrating the formation aerobatics, the size and weight of the Su-27 is considered. What an awe-inspiring picture this is!

"Russian Knights" Su-27 at turn-around position seconds before taxiing to the runway. The gleam of pruddles on the tarmac and the scattered clouds show the weather the crowds of spectators braved to see the aircraft perform No complaints were heard.

Along with demonstration flights, the "Russian Knights" pilots are involved in routine combat duties. They belong to Proskurovsky Fighter Air Regiment. Established in 1938, it is one of the most famous fighter unit in the Soviet Air Force. (Sergey Pashkovsky)

Although not armed during air shows, all the aircraft from the "Russian Knights" aerobatic team carry a full complement of pylons. This is true of all active duty Russian aircraft. Imagine how these Su-27s would look with missiles painted as elaborately as the aircraft. (Sergey Pashkovsky)

This photograph was taken from the rear cockpit of a Flanker. It gives an idea of the excellent visibility the instructor would have. The lack of obstruction is a tribute to the Sukhoi Design Bureau. (Sergey Pashkovsky)

Two Flankers of the "Russian Knights" make an energetic double take off prior to commencing their flight display. Note the orange glow of the afterburners. With such precision flying being shown at takeoff, the quality of the performance is assured. (Sergey Pashkovsky)

One of the Su-27s completes its flight display by burning the right tire's rubber on landing. Note the extreme elevation of the nose. Also, the appearance of the dorsal airbrake is worthy of remark. (Sergey Pashkovsky)

The Su-27 of the "Russian Knights", along with its ground crew, poses before a camera at the home base of the "Patrouille de France" in Salon-de-Provence. Note the difference in color between the radome and the fuselage. The high-tech configuration of the Flanker contrasts noticeably with the historic architecture of the building in the background. (Sergey Pashkovsky)

The leader of the "Russian Knights", Colonel Vladimir Basov at the controls of his Su-27. Note the oxygen mask and opacue visor which cover his face. (Sergey Pashkovskyi

Lt. Col. Alexander Dyatlov, one of the best "Knights" of the 1991-1992 season. The Flanker's roomy cockpit is a pure novelty for Soviet fighter aircraft. It provides enough free space even for Alexander, a handsome giant of a pilot. (Sergey Pashkovsky)

This photograph gives us an idea of just how massive the Su-27 is. The ten pilots from Kubinka's Proskurovsky Guard Regiment who actually form vintage '91-92 "Russian Knights" aerobatic team stand on the wingroot of an Su-27 without any fear of destroying the design of their beloved aircraft. From the left: Major Alexander Lichkun; Major Nikolay Grechanov; Major Sergey Ganichev; Lt. Col. Vladimir Bazhenov; Col. Vladimir Basov, Team Leader; Lt. Col. Vladimir Bukin; Captain Vladimir Kovalsky; Lt. Col. Alexander Dyatlov. (Sergey Pashkovsky)

Always photogenic, the "Russian Knights" aircraft are especially attractive when landing while deploying their bright drag chutes. These Su-27s certainly present a colorfu display of aerodynamics. The Russian Air Force should be proud. (Sergey Pashkovsky)

U.S. Navy/McDonnell Douglas F-18 Hornets of the "Blue Angels" aerobatic team, Mikoyan MiG-29 Fulcrums of "Swifts" team and Sukhoi Su-27 Flankers of "Russian Knights" became a unique super aerobatic team for a moment. The event happened during visit of the "Blue Angels" to Russia in fall 1992. Air enthusiasts rejoice that this unusual assembly was preserved on film. (Sergey Pashkovsky)

An air show routine featuring Su-27s is a spectacular event. Despite its size, the Flanker is extraordinarily nimble. Let's hope the "Russian Knights" continue to thrill crowds with their exploits. (Sergey Pashkovsky)

THE "TEST PILOTS"

All aircraft from Anatoly Kvochur's group wear "Test Pilots" badges. Like the "Russian Knights", the colors are those of the new Russian Flag. Anatoly personally developed the "Test Pilots" aircraft paint scheme using a plastic model kit as a dummy.

A pair of Su-27PUs (designated as Su-30s) are seen as approaching the IL-78 Midas tanker. Running after is the Su-27IB, another derivative of Sukhoi Su-27. Note the refueling hose being extended at the right of the photo.

The "Test Pilots" two seat Su-27PUs have an in-flight refueling capability. This significantly extends the team's chances of attending air shows around the world, including very remote locations. This variant is the first Air Force Flanker to be equipped in this way.

The Su-27PUs and Su-27IB with inflight refueling probes already extended close up to the Midas tanker. The paint scheme on the dorsal portions of the "Test Pilots" Flankers is well displayed here. Note how the white extends up the front of the tail fin.

The "Test Pilots", the beloved child of famous ex-Mikoyan test pilot Anatoly Kvochur was formed early in 1992. Kvochur is now a test pilot for Russia's LII Flight Research Institute. This shot provides a good view of the overall paint scheme seem on the "Test Pilots" Su-27s.

After refueling, the Flankers break formation. This photo was taken from the gunner's position in the Ilyushin IL-78 Midas.

A "Test Pilots" Su-27PU taxies after a spectacular display at the first Moscow Air Show in August 1992. There appear to be two dummy missiles on the wing tip pylons. Note the small Russian flag on the tail fin.

The Su-27PU's cockpit sits high off the ground so access to it is via ladders with attachment hooks above top rung. These ladders are visible on the opposite side of the cockpit. The red undersides of the Flanker is a bright contrast to the traditional camouflage.

During taxiing the canopy is partially opened to allow fresh air to enter the cockpit. Note the raised position of the crewman in the rear seat. Below the canopy, the "Test Pilots" logo is seen. Farther up toward the nose is logo of the LII Flight Research Institute.

A close-up shot of "Test Pilots' air-to-air refueling routine. The logo of the Jupiter Insurance Group, an independent Russian company who is a general sponsor of the "Test Pilots" team and owner of the team's aircraft, is readily seen on the Flanker's left intake. A dummy rocket is visible on the starboard wing pylon.

From left to right: Test Pilot Vladimir Loginovsky, Test Pilot Alexander Beschastnov, Honored Test Pilot Anatoly Kvochur and Test Pilot Sergey Tresvyatsky. These men make up the "Test Pilots" aerobatic group. Note the variation in flight suits. (Sergey Pashkovsky)

Mixed in-flight refueling of three Sukhois - a pair of Su-27PUs and single Su-27IB from a Ilyushin IL-78 Midas tanker. The size of the Midas tanker is impressive. Note the red section on the tail fin. It looks like it might be the old Soviet flag.

The first international debut of the "Test Pilots" took place in 1992 at Boscombe Down airfield. A single aircraft was flown by Anatoly Kvochur. It took place at the International Air Tattoo '92.

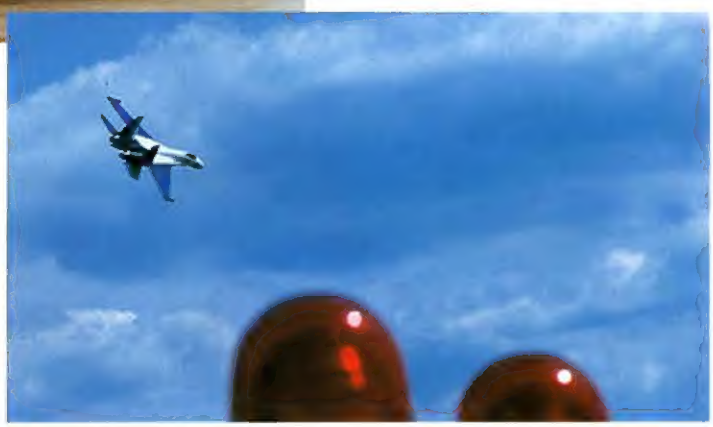
A pair of "Test Pilots" attended the Biggin Hill International Air Fair in 1992. They are shown here as they gently bank their Su-27 aircraft. The angle of their wings appear to be geometrically exactly the same.

"Test Pilots' aircraft are flown usually with wing tip dummy R-73 (AA-11 Archer) short range air-to-air missiles. This shot provides a close-up of the R-73. Note also the wing tip light.

Russia's LII Flight Research Institute logo is seen on the port side of the "Test Pilots" aircraft. LII is the home base of the "Test Pilots". This group is the first totally-civilian aerobatic team flying combat aircraft in Russia.

The standard dorsal air brake of the Su-27 is not only used during a landing. Since it contributes considerably to Flanker maneuverability, it is also used in flight. Each of the "Test Pilots" has learned the little tricks that the Su-27 can perform.

The Su-27s custom built at Novosibirsk Aircraft Production Plant. The Flankers flown by "Test Pilots" aerobatic team lack the IRST system and radar as well. The uniquely raised dorsal portion of the aircraft is quite pronounced in this view. (Sergey Pashkovsky)



Final approach leg of a distant "Test Pilots" Su-27. This shot was taken moments just before the Flanker's landing. It is noteworthy how even the brighter paint schemes of an aerobatic aircraft can blend with surrounding clouds and sky.

What many pilots would consider too dangerous to endeavor, the "Test Pilots" take in stride as routine. Tandem takeoffs like this one are unheard of for most Western pilots. The "Test Pilots" show us what a little practice can do.

The tight dual takeoffs as well as the close formation flights of the Su-27s require honed pilot skills. Due to the mere size of the aircraft, a noticeable wake is produced. Less skilled pilots would find the challenge too difficult to handle. (Sergey Pashkovsky)

Anatoly Kvochur considers the Su-27 to be more suitable for aerobatics than the MiG-29 Fulcrum based on his experience with both aircraft, we must bow to his judgement. This photo shows the underside view of one of the "Test Pilots" Flankers. (Sergey Pashkovsky)

The tail fins of the "Test Pilots" team of Su-27s bear the Russian tricolor, the popular national symbol of post-communist Russia. To many, this is certainly less menacing than the hammer and sickle insignia that was so reviled for such a long time. (Sergey Pashkovsky)

High power of the Lyulka AI-31F turbofans provide the lightened aircraft of the "Test Pilots" team with unprecedented maneuverability and a remarkable climb rate. It is not uncommon to reduce the fuel load during air show displays. With drag reduced in this way, speeds reached by the pilots thrill the crowds. (Sergey Pashkovsky)

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Su-27 FLANKER

Sergey Skrynnikov

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